

OXC - 1161
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21 December 1960

MEMORANDUM FOR : Chief, Development Branch, DFD-DD/P
SUBJECT : Trip Report of Visit to Los Angeles, California

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1. On 15 December 1960, [redacted] held a conference with [redacted] to discuss interface problems of in-flight refueling of the A-12. Generally, the areas of concern surfaced in the meeting are of an operational nature rather than a development problem.

2. It is possible for the KC-135 to fly a mission radius of 2500 nautical miles and off-load 65,000 pounds of fuel to the A-12. Such a profile requires a take-off at the tanker maximum gross weight of 297,000 pounds, does not permit time for loiter in the refueling area, and allows only 7,000 pounds of fuel reserve over the high cone at return to base. This maximum weight take-off can be made at sea level pressure altitude with a runway temperature of 40°F or less. Decreases in atmospheric pressure and/or increases in ambient temperature degrade the take-off load. A change of 5°F results in a change of 5,000 pounds permitted at take-off. Also, the 7,000 pounds of fuel reserve is far below the S.A.C. requirement of 15,000 pounds. Cruise speed of the KC-135 is approximately 450 knots at this loading condition. The minimum acceptable range, time of loiter, and payload for transfer, must receive an operational analysis of mission profiles. The desired refueling speed of 0.85 Mach due to the A-12 performance characteristics will also reduce the KC range potential. Many of the answers to the problems must await the results of the flight test program.

3. Probably the biggest operational problem, which also will receive much evaluation during flight test, is that of the A-12/tanker rendezvous. Passive, i.e., visual, acquisition, identification, and join-up will be quite difficult. Such techniques are not in use by S.A.C. Active identification is used. In the B-47 and B-52 rendezvous, the tanker emits a radar beacon signal received by the

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bomber on the bomb-radar set. For the B-58, the bomber pilot transmits on UHF for a UHF/DF steer to the tanker. The use of the radar beacon is "less active" than the UHF since it is of much shorter range transmission. There are passive "helps" that can aid the receiver such as short bursts of dumping fuel. This method is of little value if the A-12 is above the tanker over snow or clouds or in bad weather. The use of the radar beacon would require additional equipment to be installed in the A-12.

4. Discussions were also held on the recall capability of the A-12. It would be desirable to recall the A-12 from any point in the mission profile. However, the reaction time from penetration to recall is approximately one-half the flight time over denied territory thus negating the need. It would seem more practical to establish the last point of recall as the point of refueling. The tanker has the long range radio capability and can relay any such requirement via UHF and/or visual signals. The UHF relay can extend approximately 650 miles after "break away." Thus, the recall capability is "in house" without the weight penalty of additional equipment in the operational vehicle.

5. The saving of weight philosophy should also extend to the rendezvous problem. If some new passive means of establishing contact between the two aircraft cannot be developed, then no new active equipment should be added to the A-12. If active means must be employed and can be accepted operationally, the capability already exists for such identification. New means of passive acquisition should be exploited whenever possible. If the skin temperature of the A-12 is not too high as to make an IR sight impractical, this may be one such possibility. Any method or scheme should be solicited from all available sources.

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